Contents of Volume 33

Vol. 33, No 1, January (I) 1997

Mini review

Pollen embryogenesis
T.L. Reynolds **1–10**

Research articles

Comparative analysis of the chromosomal and genomic organization of *Ty*1-*copia*-like retrotransposons in pteridophytes, gymnosperms and angiosperms
A. Brandes, J.S. Helsop-Harrison, A. Kamm, S. Kubis, R.L. Doudrick, T. Schmidt **11–21**

Sense and antisense transcripts of the maize *MuDR* regulatory transposon localized by *in situ* hybridization
P. Joanin, R. Jane Hershberger, M-I. Benito, V. Walbot **23–36**

Mitochondrial DNA variations and nuclear RFLPs reflect different genetic similarities among 23 *Arabidopsis thaliana* ecotypes
H. Ullrich, K. Lättig, A. Brennicke, V. Knoop **37–45**

Isolation and characterization of a gene encoding endo-β-1,4-glucanase from pepper (*Capsicum annuum* L.)
M.H. Harpster, K.Y. Lee, P. Dunsmuir **47–59**

Seasonal expression of a dehydrin gene in sibling deciduous and evergreen genotypes of peach (*Prunus persica* [L.] Batsch)
T.S. Artlip, A.M. Callahan, C.L. Bassett, M.E. Wisniewski **61–70**

Expression characteristics of *OS-ACS1* and *OS-ACS2*, two members of the 1-aminocyclopropane-1-carboxylate synthase gene family in rice (*Oryza sativa* L. cv. Habiganj Aman II) during partial submergence
T.I. Zarembinski, A. Theologis **71–77**

Mutations of cytochrome b_6 in *Chlamydomas reinhardtii* disclose the functional significance for a proline to leucine conversion by *petB* editing in maize and tobacco
F. Zito, R. Kuras, Y. Choquet, H. Kössel, F.A. Wollman **79–86**

An endo-1,4-β-glucanase expressed at high levels in rapidly expanding tissues
D.A. Brummel, C.R. Bird, W. Schuch, A.B. Bennett **87–95**

Molecular characterization and promoter analysis of the maize cytosolic glyceraldehyde 3-phosphate dehydrogenase gene family and its expression during anoxia
S. Manjunath, M.M. Sachs **97–112**

The temporal and spatial transcription pattern in root nodules of *Vicia faba* nodulin genes encoding glycine-rich proteins
G. Schröder, M. Frühling, A. Pühler, M. Perlick **113–123**

The *Arabidopsis ACT11* actin gene is strongly expressed in tissues of the emerging inflorescence, pollen, and developing ovules
S. Huang, Y.-Q. An, J.M. McDowell, E.C. McKinney, R.B. Meagher **125–139**

cDNA cloning and differential gene expression of three catalases in pumpkin
M. Esaka, N. Yamada, M. Kitabayashi, Y. Setoguchi, R. Tsugeki, M. Kondo, M. Nishimura **141–155**

***LhcaR1* of the red alga *Porphyridium cruentum* encodes a polypeptide of the LHCI complex with seven potential Chlorophyll *a*-binding residues that are conserved in most LHCs**
S. Tan, F.X. Cunningham, Jr., E. Gantt **157–167**

Short communications

A 38 bp repeat sequence with the pea seed storage protein promoter of *legA* is a binding site for a nuclear DNA-binding protein
P.M. Howley, J.A. Gatehouse **175–180**

Chloroplastic isoforms of DnaJ and GrpE in pea
T. Schlicher, J. Soll **181–185**

Aspartic proteinase genes in the Brassicaceae *Arabidopsis thaliana* and *Brassica napus*
K. D'Hondt, S. Stack, S. Gutteridge, J. Vanderkerckhove, E. Krebbers, S. Gal **187–192**

Characterization of three anther-specific genes isolated from Chinese cabbage
H.U. Kim, T.Y. Chung **193–198**

Vol. 33, No. 2, January (II) 1997

Mini review

State of the art of the production of the antimalarial compound artemismin in plants
E. Van Geldre, A. Vergauwe and E. Van den Eeckhout **199–209**

Research articles

Three differentially expressed S-adenosylmethionine synthetases from *Catharanthus roseus*: molecular and functional characterization
G. Schröder, J. Eichel, S. Breinig and J. Schröder **211–222**

Isolation, characterization and molecular cloning of the mannose-binding lectins from leaves and roots of garlic (*Allium sativum* L.)
K. Smeets, E.J.M. Van Damme, P. Verhaert, A. Barre, P. Rougé, F. Van Leuven and W.J. Peumans **223–234**

Characterization of RNA-mediated resistance to tomato spotted wilt virus in transgenic tobacco plants expressing NS_M gene sequences
M. Prins, M. Kikkert, C. Ismayaldi, W. de Graauw, P. de Haan and R. Goldbach **235–243**

A 146 bp fragment of the tobacco *Lhcb1*2* promoter confers very-low-fluence, low-fluence and high-irradiance responses of phytochrome to a minimal CaMV 35S promoter
P.D. Cerdán, R.J. Staneloni, J.J. Casal and R.A. Sánchez **245–255**

The promoter of the tobacco Tnt1 retrotransposon is induced by wounding and by abiotic stress
C. Mhiri, J-B. Morel, S. Vernhettes, J.M. Casacuberta, H. Lucas and M-A. Grandbastien **257–266**

Characterization of dynamics of the *psb*D light-induced transcription in mature wheat chloroplasts
J. Satoh, K. Baba, Y. Nakahira, T. Shiina and Y. Toyoshima **267–278**

Characterization of a tobacco extensin gene and regulation of its gene family in healthy plants and under various stress conditions
C. Hirsinger, Y. Parmentier, A. Durr, J. Fleck and E. Jamet **279–289**

Cloning and characterization of a pollen-specific cDNA encoding a glutamic-acid-rich protein (GARP) from potato *Solanum berthaultii*
J-q. Liu, U. Seul and R. Thompson **291–300**

Molecular cloning and expression of two cDNAs encoding asparagine synthetase in soybean
C.A. Hughes, H.S. Beard and B.F. Matthews **301–311**

Characterization of two cDNA clones for mRNAs expressed during ripening of melon (*Cucumis melo* L.) fruits
A. Aggelis, I. John, Z. Karvouni and D. Grierson **313–322**

Structure of the parsley caffeoyl-CoA *O*-methyltransferase gene, harbouring a novel elicitor responsive *cis*-acting element
B. Grimmig and U. Matern **323–341**

Differential transcript induction of parsley pathogenesis-related proteins and of a small heat shock protein by ozone and heat shock
H. Eckey-Kaltenbach, E. Kiefer, E. Grosskopf, D. Ernst and H. Sandermann Jr. **343–350**

Engineering resistance against tomato yellow leaf curl virus (TYLCV) using antisense RNA
M. Bendahmane and B. Gronenborn **351–357**

Short communication

Molecular cloning, characterization and expression of cDNA encoding phosphoserine aminotransferase involved in phosphorylated pathway of serine biosynthesis from spinach
K. Saito, Y. Takagi, H.C. Ling, H. Takahashi and M. Noji **359–366**

tocentry *Vol. 33, No. 3, February 1997 Research articles*

Protein complexes binding to cis elements of the plant histone gene promoters: multiplicity, phosphorylation and cell cycle alteration
W.H. Shen, C. Gigot **367–379**

Light induces accumulation of isocitrate lyase mRNA in a carotenoid-deficient mutant of *Chlamydomonas reinhardtii*
S. Petridou, K. Foster, K. Kindle **381–392**

Characterization of somatic embryogenesis-related cDNAs from alfalfa (*Medicago sativa* L.)
R.W. Giroux, K.P. Pauls **393–404**

Developmental and transgenic analysis of two tomato fruit enhanced genes
C.G. Santino, G.L. Stanford, T.W. Conner **405–416**

Regulated expression of a wheat germin gene in tobacco: oxalate oxidase activity and apoplastic localization of the heterologous protein
A. Berna, F. Bernier **417–429**

Molecular cloning and characterization of ADP-glucose pyrophosphorylase cDNA clones isolated from pea cotyledons
D. Burgess, A. Penton, P. Dunsmuir, H. Dooner **431–444**

Comparison among DNA polymerases 1, 2 and 3 from maize embryo axes. A DNA primase activity copurifies with DNA polymerase 2
E. García, D. Orjuela, Y. Camacho, J.J. Zúñiga, J. Plasencia, J.M. Vázquez-Ramos **445–455**

Analysis of the native forms of the 90 kDa heat shock protein (hsp90) in plant cytosolic extracts
P. Krishna, R.K. Reddy, M. Sacco, J.R.H. Frappier, R.F. Felsheim **457–466**

Calcium influx signals normal flagellar RNA induction following acid shock of *Chlamydomonas reinhardtii*
J.H. Evans, L.R. Keller **467–481**

Chromoplast development in ripening tomato fruit: identification of cDNAs for chromoplast-targeted proteins and characterization of a cDNA encoding a plastid-localized low-molecular-weight heat shock protein
S.D. Lawrence, K. Cline, G.A. Moore **483–492**

Structure, chromosomal location and expression of a rice gene encoding the microsome ω-3 fatty acid desaturase
H. Kodama, H. Akagi, K. Kusumi, T. Fujimura, K. Iba **493–502**

The isolation and characterisation of type II metallothionein-like genes from tomato (*Lycopersicon esculentum* L.)
C.A. Whitelaw, J.A. Le Huquet, D.A. Thurman & A.B. Tomsett **503–511**

Characterization of a novel rice bZIP protein which binds to the α-globulin promoter
M. Nakase, N. Aoki, T. Matsuda, T. Adachi **513–522**

Molecular cloning of the bark and seed lectins from the Japanese pagoda tree (*Sophora japonica)*
E.J.M. van Damme, A. Barre, P. Rougé, W.J. Peumans **523–536**

Two genes for the high mobility group protein HMG-Y are present in the genome of *Canavalia gladiata* D.C.
S. Yamamoto, T. Minamikawa **537–544**

Short communications

HMG-CoA reductase gene families that differentially accumulate transcripts in potato tubers are developmentally expressed in floral tissues
K.L. Korth, B.A. Stermer, M.K. Bhattacharyya, R.A. Dixon **545–551**

The β-phaseolin 5′ matrix attachment region acts as an enhancer facilitator
A.H.M. van der Geest, T.C. Hall **553–557**

Analysis of the ribosomal RNA gene repeat from the moss *Funaria hygrometrica*
I. Capesius **559–564**

Functional activity of sporamin from sweet potato *Ipomoea batats* Lam.): a tuber storage protein with trypsin inhibitory activity
K.-W. Yeh, J.-C. Chen, M.-I. Lin, Y.-M. Chen, C.-Y. Lin **565–570**

Erratum **571**

Vol. 33, No. 4, March (I) 1997

Mini review

Prospects for advancing the understanding of complex biochemical systems
Junli Liu, J.W. Crawford, R. Viola and B. Goodman **573–581**

Research articles

Analysis of type 1 metallothionein cDNAs in *Vicia faba*
R.C. Foley, Z.M. Liang and K.B. Singh **583–591**

Regulation of two loblolly pine (*Pinus taeda* L.) isocitrate lyase genes in megagametophytes of mature and stratified seeds and during postgerminative growth
R.T. Mullen and D.J. Gifford **593–604**

Molecular characterization of L2 lipoxygenase from maize embryos
A.B. Jensen, E. Poca, M. Rigaud, G. Freyssinet and M. Pagès **605–614**

Isolation and characterisation of a diverse family of *Arabidopsis* two and three-fingered C_2H_2 zinc finger protein genes and cDNAs
R. Meissner and A.J. Michael **615–624**

Differential accumulation of two glycine-rich proteins during cold-acclimation alfalfa
J.-M. Ferullo, L.-P. Vézina, J. Rail, S. Laberge, P. Nadeau and Y. Castonguay **625–633**

RNA processing alters open reading frame stoichiometry from the large ATP synthase gene cluster of spinach chloroplasts
T. Hotchkiss and M.J. Hollingsworth **635–640**

Cloning and characterization of tomato leaf senescence-related cDNAs
I. John, R. Hackett, W. Cooper, R. Drake, A. Farrell and D. Grierson **641–651**

Pollination-enhanced expression of a receptor-like protein kinase related gene in tobacco styles
H.-Y. Li and J.E. Gray **653–665**

A novel glycine-rich/hydrophobic 16 kDa polypeptide gene from tobacco: similarity to proline-rich protein genes and its wound-inducible and developmentally regulated expression
E. Yasuda, H. Ebinuma and H. Wabiko **667–678**

Characterization of two cDNAs encoding auxin-binding proteins in *Nicotiana tabacum*
N. Leblanc, C. Roux, J.-M. Pradier and C. Perrot-Rechenmann **679–689**

Curculin, a sweet-tasting and taste-modifying protein, is a non-functional mannose-binding lectin
A. Barre, E.J.M. van Damme, W.J. Peumans and P. Rougé **691–698**

Sequence and RT-PCR expression analysis of two peroxidases from *Arabidopsis thaliana* belonging to a novel evolutionary branch of plant peroxidases
I.V.H. Kjærsgård, H.M. Jespersen, S.K. Rasmussan and K.G. Welinder **699–708**

Multiple transcription start sites of the carrot dihydrofolate reductase-thymidylate synthase gene, and sub-cellular localization of the bifunctional protein
M. Luo, R. Orsi, E. Patroccu, S. Pancaldi and R. Cella **709–722**

Expression of the *Arabidopsis* G-protein GPα1: purification and characterisation of the recombinant protein
A. Wise, P.G. Thomas, T.H. Carr, G.A. Murphy and P.A. Millner **723–728**

Short communications

Expression patterns of vascular-specific promoters *RolC* and *Sh* in transgenic potatoes and their use in engineering PLRV-resistant plants
M.W. Graham, S. Craig and P.M. Waterhouse **729–735**

Isolation of pathogen/stress-inducible cDNAs from alfalfa by mRNA differential display
G.M. Truesdell and M.B. Dickman **737–743**

Cloning and characterisation of a gene encoding an antiviral protein from *Clerodendrum aculeatum* L.
D. Kumar, H.N. Verma, N. Tuteja and K.K. Tewari **745–751**

Characterization of the plant homologue of prohibitin, a gene associated with antiproliferative activity in mammalian cells
W.A. Snedden and H. Fromm **753–756**

***Knotted1*-like homeobox genes are expressed during apple tree *Malus domestica* [L.] Borkh) growth and development**
B. Watillon, R. Kettmann, P. Boxus and A. Burny **757–763**

Molecular cloning and characterization of a cDNA encoding α-glucosidase from spinach
M. Sugimoto, S. Furui and Y. Suzuki **765–768**

Erratum **769**

Vol. 33, No. 5, March (II) 1997

Mini review

Protein import into plant mitochondria
J. Whelan and E. Glaser **771–789**

Research articles

Structural characteristics of two wheat histone H2A genes encoding distinct types of variants and functional differences in their promoter activity
G.H. Huh, T. Nakayama, T. Meshi, M. Iwabuchi **791–802**

Differential expression of pathogen-responsive genes encoding two types of glycine-rich proteins in barley
A. Molina, M. Mena, P. Carbonero and F. García-Olmedo **803–810**

Overexpression of D-*myo*-inositol-3-phosphate synthase leads to elevated levels of inositol in *Arabidopsis*
C.C. Smart and S. Flores **811–820**

Leaf senescence in *Brassica napus*: cloning of senescence related genes by subtractive hybridisation
V. Buchanan-Wollaston and C. Ainsworth **821–834**

Developmental regulation of two tomato lipoxygenase promoters in transgenic tobacco and tomato
N. Beaudoin and S.J. Rothstein **835–846**

Effects of chilling on the expression of ethylene biosynthetic genes in Passe-Crassane pear (*Pyrus communis* L.) fruits
J.-M. Lelièvre, L. Tichit, P. Dao, L. Fillion, Y.-W. Nam, J.-C. Pech and A. Latché **847–855**

Characterization of the gene for ^{1}-pyrroline-5-carboxylate synthetase and correlation between the expression of the gene and sals tolerance in *Oryza sativa* L.
Y. Igarashi, Y. Yoshiba, Y. Sanada, K. Yamaguchi-Shinozaki, K. Wada and K. Shinozaki **857–865**

Differential expression of TPS11, a phospate starvation-induced gene in tomato
C. Liu, U.S. Muchhal and K.G. Raghothama **867–874**

Spatially distinct expression of two new cytochrome P450s in leaves of *Nepeta racemosa*: identification of a trichome-specific isoform
I.M. Clark, B.G. Forde and D.L. Hallahan **875–885**

The consequence of peroxidase overexpression in transgenic plants on root growth and development
L.M. Lagrimini, R.J. Joly, J.R. Dunlap and T.-T.Y. Liu **887–895**

Structural organization, expression and promote activity of a cold-stress-inducible gene of potato (*Solanum tuberosum* L.)
H.-H. Kirch, J. van Berkel, H. Glaczinski, F. Salamini and C. Gebhardt. **897–909**

***Brassica napus* cDNAs encoding fatty acyl-CoA synthetase**
M. Fulda, E. Heinz and F.P. Wolter **911–922**

Expression of an isoflavone reductase-like gene enhanced by pollen tube growth in pistils of *Solanum tuberosum*
G.J. van Eldik, R.K. Ruiter, P.H.W.N. Colla, M.M.A. van Herpen, J.A.M. Schrauwen and G.J. Wullems **923–929**

Short communications

Soybean *DapA* mutations encoding lysine-insensitive dihydrodipicolinate synthase
G.W. Silk and B.F. Matthews **931–933**

The wheat protein kinase gene, *TaPK3*, of the *PKABA1* subfamily is differentially regulated in greening wheat seedlings
L.D. Holappa and M.K. Walker-Simmons **935–941**

Comparison of the activities of CaMV 35S and FMV 34S promoter derivatives in *Catharanthus roseus* cells transiently and stably transformed by particle bombardment
L. van der Fits and J. Memelink **943–946**

Vol. 33, No. 6, April 1997

Mini review

Unraveling DNA helicases from plant cells
N. Tuteja **947–952**

Research articles

Constitutive non-inducible expression of the *Arabidopsis thaliana Nia 2* gene in two nitrate reductase mutants of *Nicotiana Plumbaginifolia*
C. Kaye, N.M. Crawford, R.L. Malmberg **953–964**

Alternate paths of evolution for the photosynthetic gene *rbc*L in four nonphotosynthetic species of *Orobanche*
A.D. Wolfe, C.W. dePamphilis **965–977**

Molecular cloning, structure and expression of an elicitor-inducible chitinase gene from pine trees
H. Wu, G.S. Echt, M.P. Popp, J.M. Davis **979-987**

Enhanced expression in tobacco of the gene encoding green fluorescent protein by modification of its codon usage
G.J.A. Rouwendal, O. Mendes, E.J.H. Wolbert, A.D. de Boer **989–999**

Differential regulation of chloroplast gene expression in *Chlamydomonas reinhardtii* during photoacclimation: light stress transiently supresses synthesis of the Rubisco LSU protein while enhancing synthesis of the PS II D1 protein
M. Shapira, A. Lers, P.B. Heifetz, V. Irihimovitz, C.B. Osmond, N.W. Gillham, J.E. Boynton **1001–1011**

mRNA stability and localisation of the low-temperature-responsive barley gene family *blt14*
J.R. Phillips, M.A. Dunn, M.A. Hughes **1013–1023**

The presence of a *Sar1* gene family in *Brassica campestris* that suppresses a yeast vesicular transport mutation *Sec12-1*
W.Y. Kim, N.E. Cheong, D.Y. Je, M.G. Kim, C.O. Lim, J.D. Bahk, M.J. Cho, S.Y. Lee **1025–1035**

High content, size and distribution of single-stranded DNA in the mitochondria of *Chenopodium album* (L.)
S. Backert, R. Lurz, O.A. Oyarzabal, T. Börner **1037–1050**

***Copia*-like retrotransposons in rice: sequence heterogeneity, species distribution and chromosomal locations**
S. Wang, Q. Zhang, P.J. Maughan, M.A. Saghai Maroof **1051–1058**

Mutagenesis of the D-E loop of photosystem II reaction centre protein D1. Function and assembly of photosystem II
P. Mulo, T. Tyystjärvi, E. Tyystjärvi , Govindjee, P. Mäenpää, E.-M. Aro **1059–1071**

Isolation and transcript analysis of gibberellin 20-oxidase genes in pea and bean in relation to fruit development
J.L. García-Martínez, I. López-Diaz, M.J. Sánchez-Beltrán, A.L. Phillips, D.A. Ward, P. Gaskin, P. Hedden **1073–1084**

Short communication

Cloning and characterization of the *OsNramp* family from *Oryza sativa*, a new family of membrane proteins possibly implicated in the transport of metal ions
A. Belouchi, T. Kwan, P. Gros **1085–1092**

Identification and characterization of $(GA/CT)_n$-microsatellite loci from *Quercus petraea*
H. Steinkellner, S. Fluch, E. Turetschek, C. Lexer, R. Streiff, A. Kremer, K. Burg, J. Glössl **1093–1096**

Excision of the maize transposable element *Ac* in periclinical leaves of *35S-Ac-rolC* transgenic aspen-*Populus*
M. Fladung, M. Raj Ahuja **1097–1103**

Characterization of a structurally and functionally diverged acyl-acyl carrier protein desaturase from milkweed seed
E.B. Cahoon, S.J. Coughlan, J. Shanklin **1105–1110**

Instructions to authors **1111–1114**

Volume contents **1115–1123**

Author index **1125–1126**